

# **Compartmentalizing Lake Okeechobee: A Possible Solution for Consideration by the WRAC – Lake Okeechobee Committee**

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31-May-2006 Lake Okeechobee Committee Meeting

Water Resources Advisory Commission

# The Problems

- Reduced Lake O. storage capability
- Lower stages needed for healthy Lake
- Inflows during wet years exceed the storage capability of the Lake
- Damaging discharges to the estuaries required to protect the HH Dike
  - Lower regulation schedule only a minor help
  - CERP storage areas will help, but won't prevent damaging discharges to the estuaries in very wet years
- 2004-05 Hurricanes stirred up bottom sediments
- Aging infrastructure
- Rapidly Rising Real Estate Costs
- 
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# Solutions?

- No single storage solution
- Restudy proposed storage areas north, south, east, west and under the perimeter of LOK (i.e., ASR)
  - Acceler8 to build the larger storage areas
- The frequency of damaging estuary discharges will be reduced with CERP storage areas, but very wet years will still require large releases.

# What about Compartmentalization?

- Not a new idea
- Two previous conceptual plans proposed:
  1. 1973 Report to USACE by Atlantis Scientific
    - California firm hired by USACE to conduct an “environmental audit” of the Kissimmee & Lake O region.
    - Lake Tri-Section described in the report as potential storage option.
  2. 1999 C&SF Project Comprehensive Review Study (Restudy)
    - Simulated concept of two sections/compartments

# What is Compartmentalization?

- Basically subdividing the Lake with a dam to increase benefits to all of the multiple purposes for managing the Lake.
- Water control structures in the interior dam needed to:
  - manage optimal water levels in each compartment
  - allow commercial and recreational navigation

AN ASSESSMENT OF

WATER RESOURCE MANAGEMENT —

IN THE CENTRAL AND SOUTHERN

FLORIDA FLOOD CONTROL DISTRICT

A REPORT PREPARED FOR THE:  
DEPARTMENT OF THE ARMY,  
CORPS OF ENGINEERS,  
JACKSONVILLE DISTRICT,  
APRIL 2, 1973

"A REVIEW AND EVALUATION OF ENVIRONMENTAL  
REPORTS ON THE KISSIMMEE RIVER AND  
LAKE OKEECHOBEE" BY:

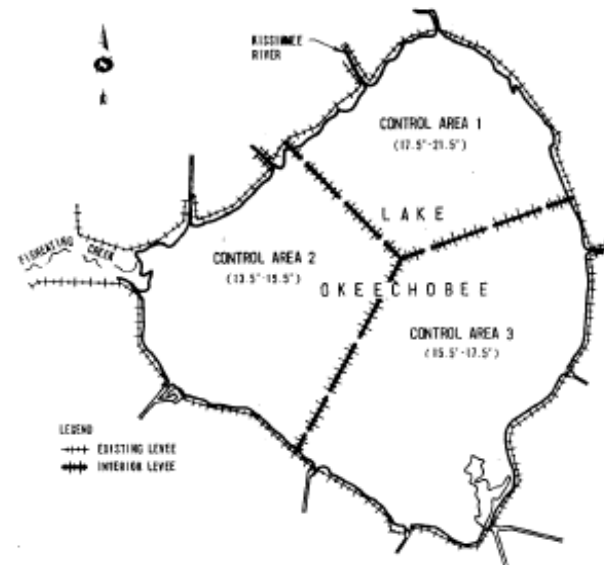


ATLANTIS SCIENTIFIC  
9015 Wilshire Boulevard  
Beverly Hills, California

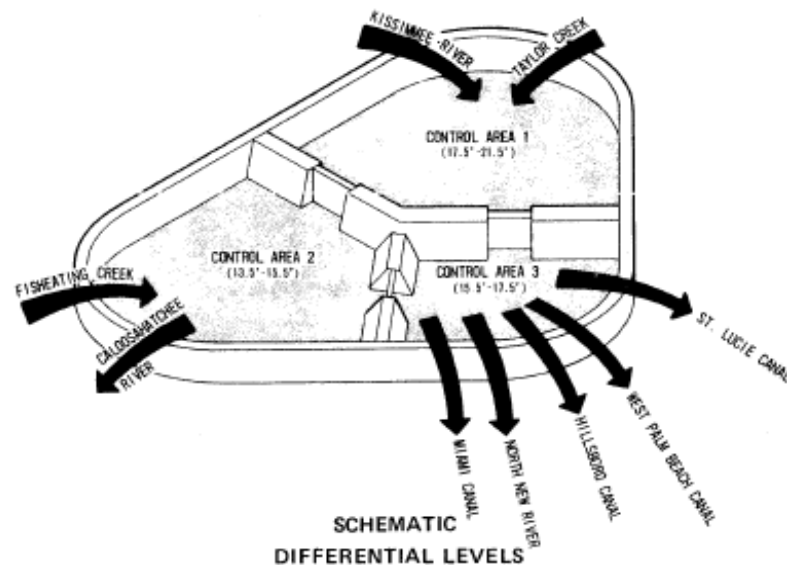
South Florida Water  
Management District  
REFERENCE CENTER

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PLAN VIEW

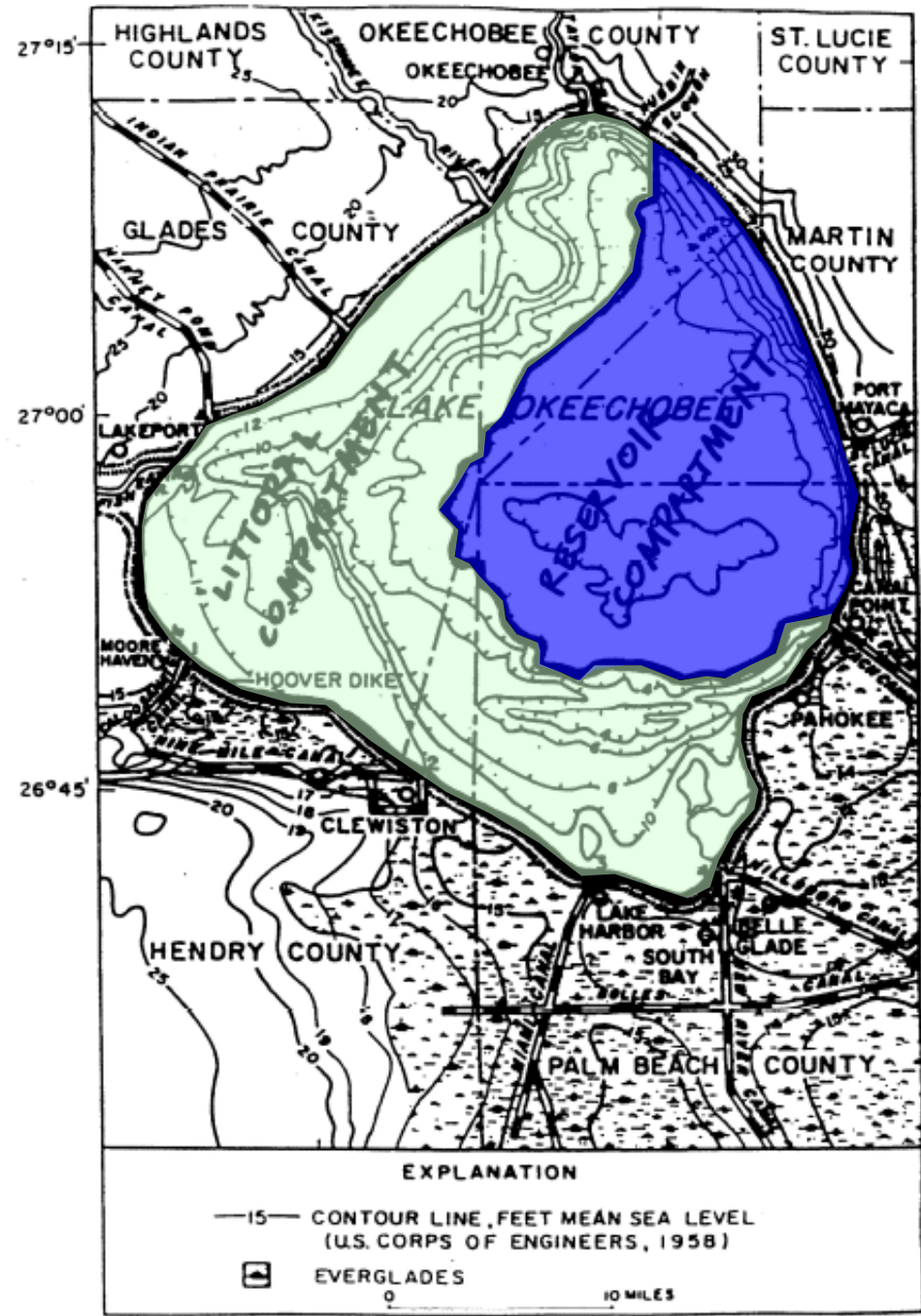


SCHEMATIC  
DIFFERENTIAL LEVELS

TRI-SECTION - LAKE OKEECHOBEE

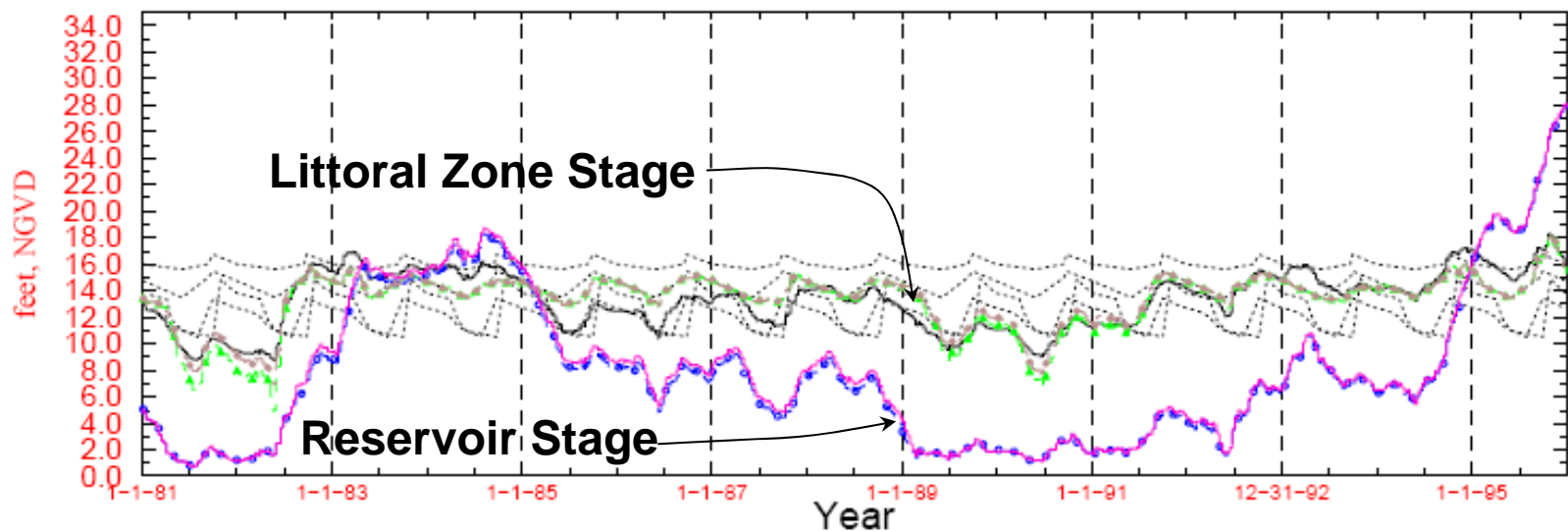
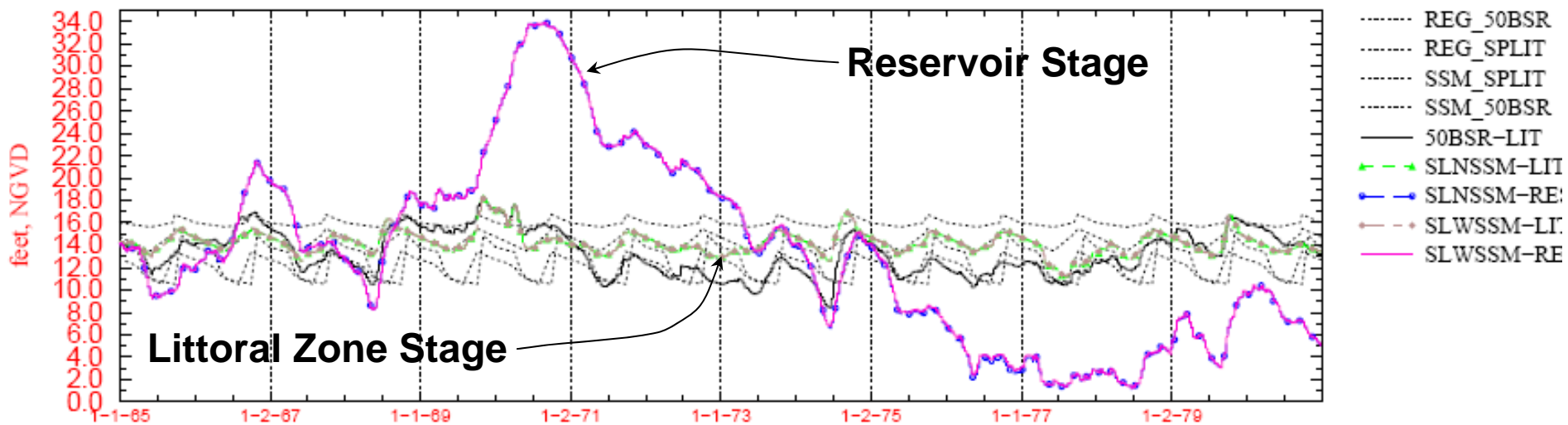
Section B.3.5.9 Partitioning Lake Okeechobee Scenario  
Hydrology and Hydraulics Modeling  
Appendix B April 1999

CENTRAL AND SOUTHERN FLORIDA PROJECT  
COMPREHENSIVE REVIEW STUDY  
FINAL INTEGRATED FEASIBILITY REPORT AND  
PROGRAMMATIC ENVIRONMENTAL IMPACT STATEMENT  
U.S. ARMY CORPS OF ENGINEERS  
SOUTH FLORIDA WATER MANAGEMENT DISTRICT  
APRIL, 1999



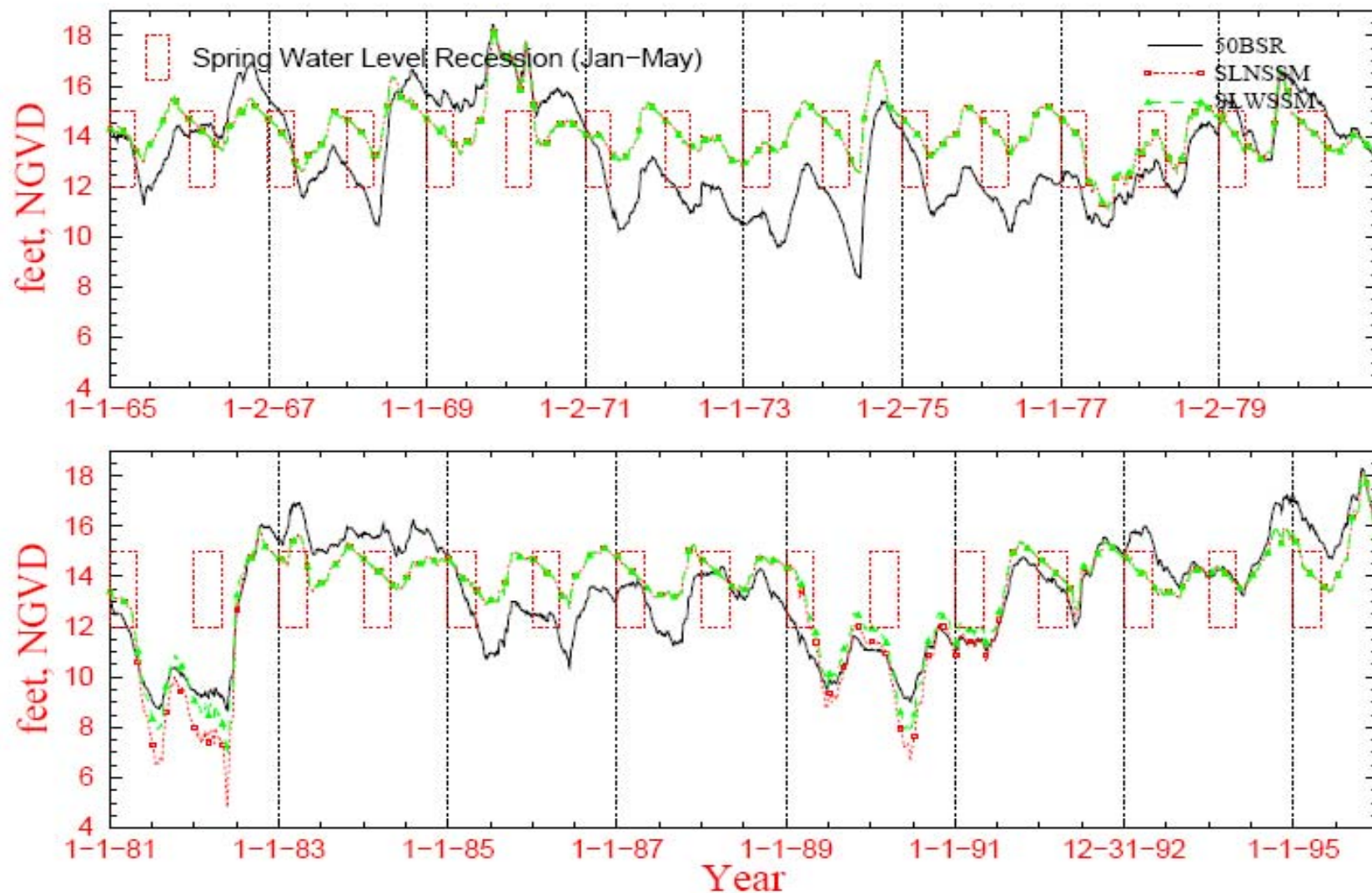
Map of Lake Okeechobee area showing topography and principal drainage.  
Figure B.3-97

Figure B.3-100 Daily Stage Hydrographs for Lake Okeechobee

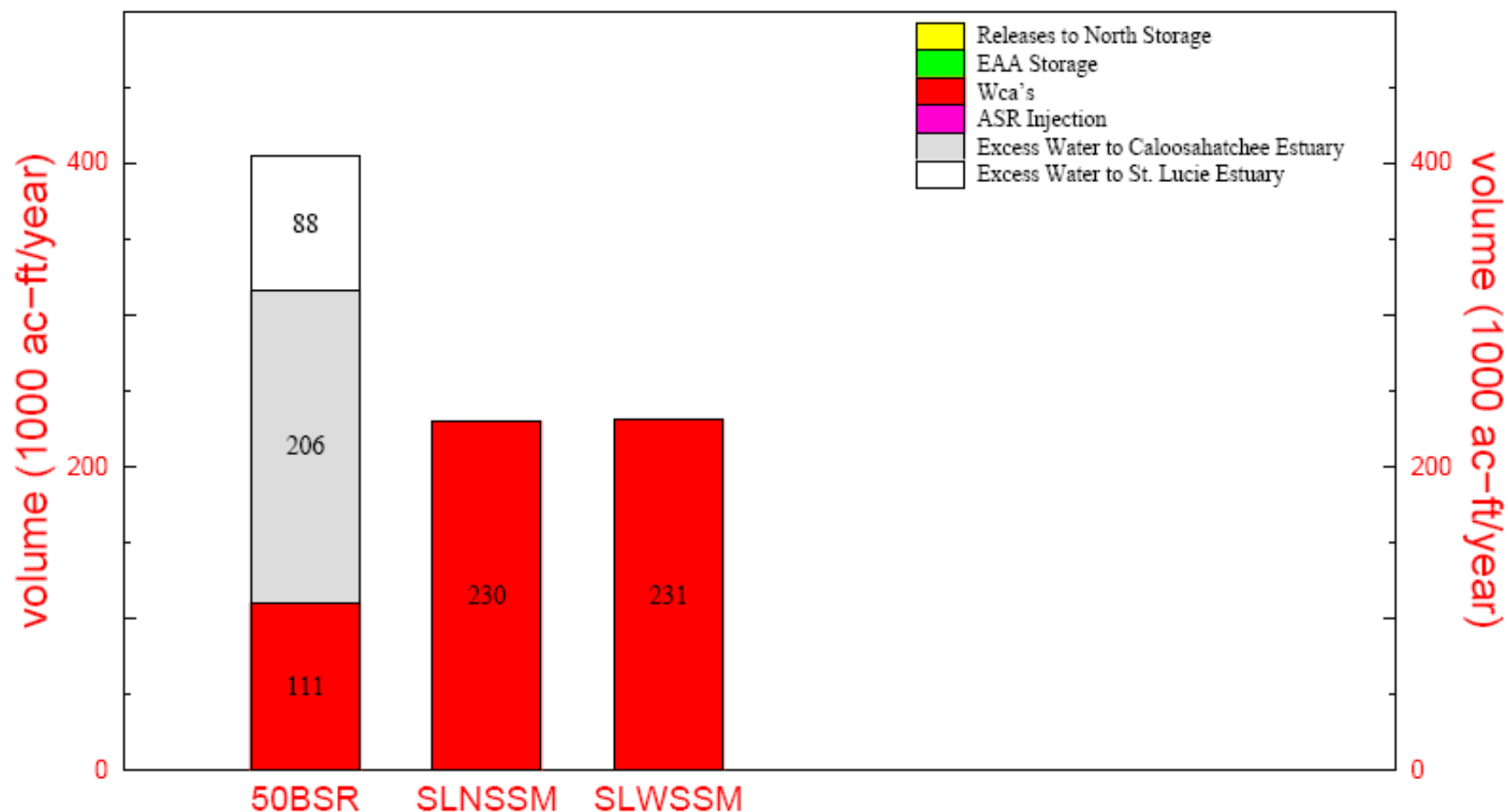




**Figure B.3-103 Daily Stage Hydrographs for Lake Okeechobee**  
**Spring Water Level Recession Windows**

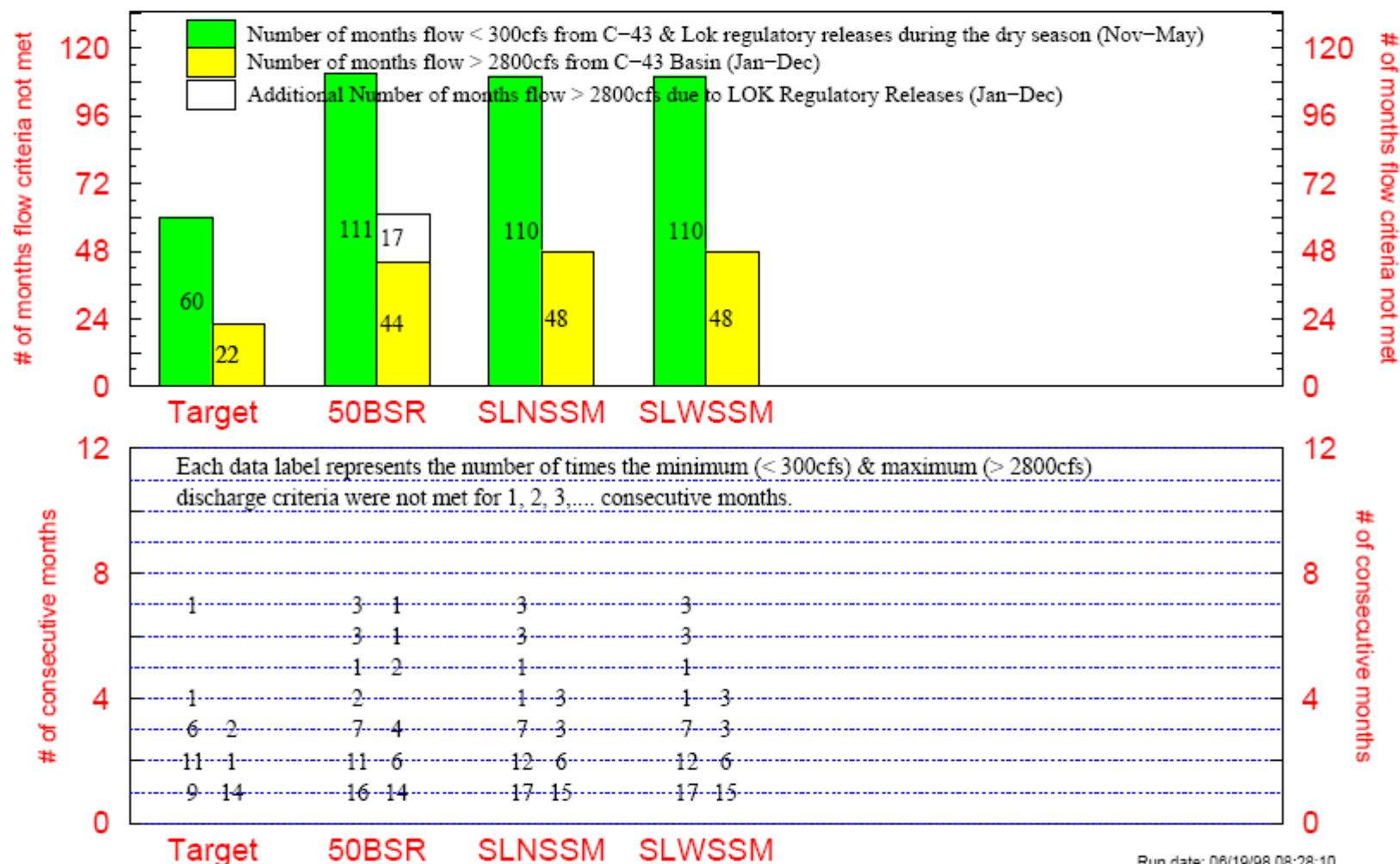


**Figure B.3-105 Mean Annual Flood Control Releases from Lake Okeechobee for the 31-yr. (1965 - 1995) Simulation**

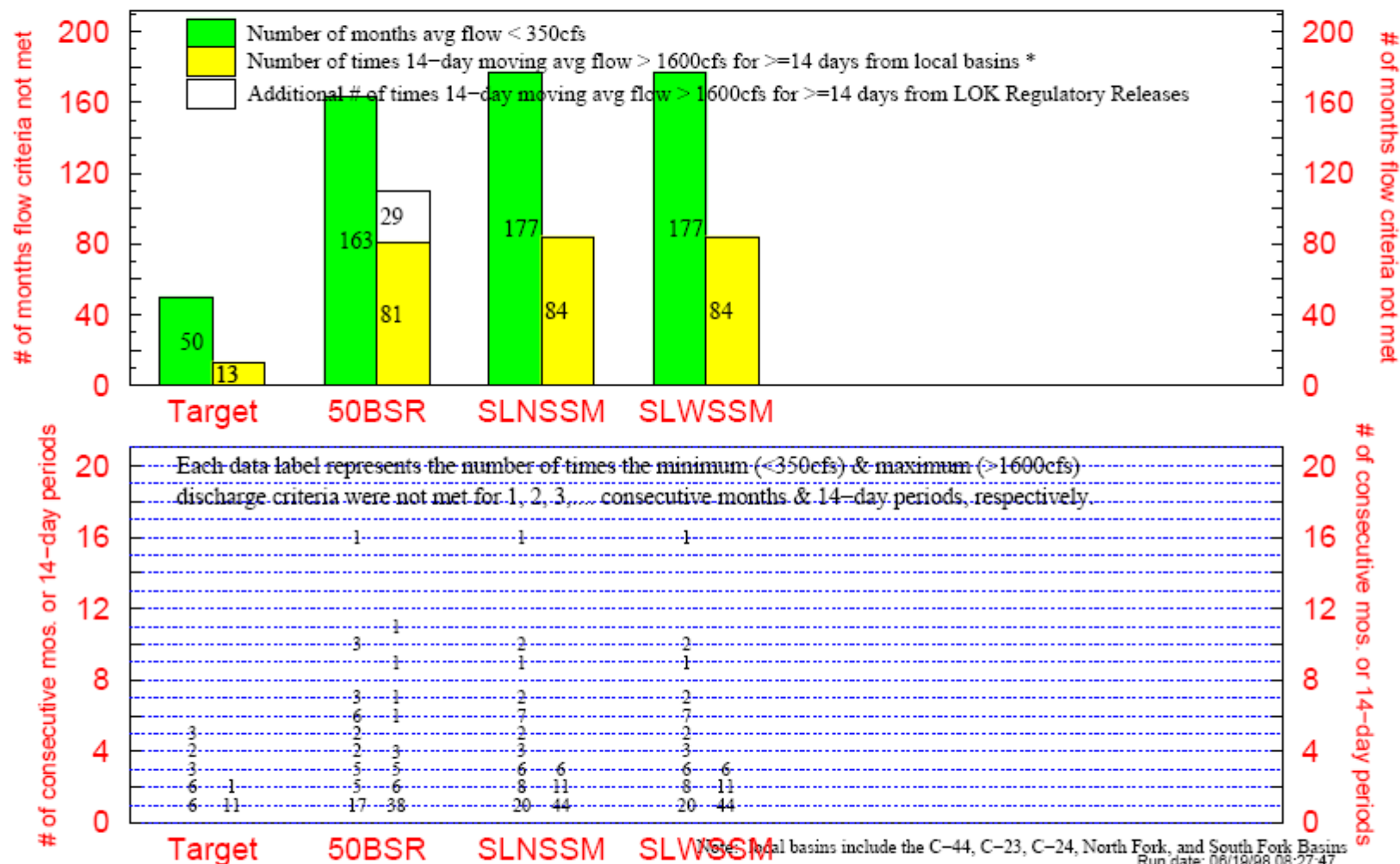


Note: Although regulatory (flood control) discharges are summarized here in mean annual values, they do not occur every year. Typically they occur in 2-4 consecutive years and may not occur for up to 7 consecutive years.

**Figure B.3-111 Number of Times Salinity Envelope Criteria were NOT met for the Calooshatchee Estuary (mean monthly flows 1965 - 1995)**



**Figure B.3-112 Number of Times Salinity Envelope Criteria were NOT met for the St. Lucie Estuary**



Notes: local basins include the C-44, C-23, C-24, North Fork, and South Fork Basins  
Run date: 06/19/98 08:27:47  
For Planning Purposes Only  
SFWMM V3.5

# Potential Benefits from Compartmentalization

- Increase water storage capability
  - Buffer estuaries from damaging lake discharges
  - Increase water supply capability
- Increase ability to manage optimal lower stages for littoral zone & fisheries
  - Period drawdowns more feasible
- Internal dam will also:
  - reduce wind fetch length
    - Improve navigation safety
    - Reduce turbidity
  - Improve recreational access
  - Dampen effects of storm surges on perimeter HH Dike
  - Improve local transportation
- Deep water compartment(s) could be periodically drawn-down (dewatered) to remove bottom sediments

# Concerns & Unknowns

- Impact to Lake circulation patterns
- Ecological impacts
- Cost
- Timeframe

# Recommendation to the WRAC Lake Okeechobee Committee

- Consider the Lake Okeechobee compartmentalization concept and include it on the list of potential solutions to the Lake Okeechobee and Estuary problems